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EXAMINER	
HOLLERAN, ANNE L	
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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/511,101	KOGANTY ET AL.	
	Examiner	Art Unit	
	ANNE L. HOLLERAN	1643	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *01 July 2009*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1,2,8,10-24,26-81,87,88,90,134-138 and 141-150* is/are pending in the application.

4a) Of the above claim(s) *75,76 and 81* is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1,2,8,10-24,26-72,77-80,87,88,90,134-138,146,149 and 150* is/are rejected.

7)☒ Claim(s) *73, 74, 141-145, 147 and 148* is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date *05/2009*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

The amendment filed 7/01/2009 is acknowledged. Claims 1, 2, 8, 10-24, 26-81, 87, 88, 90, 134-138, and 141-150 are pending.

Claims 75, 76, and 81 are withdrawn. Claims 134-137, previously withdrawn, are now under examination in view of the amendment to these claims.

Claims 1, 2, 8, 10-24, 26-74, 77-80, 87, 88, 90, 134-138, and 141-150 are examined on the merits.

Rejections Withdrawn:

Claim Rejections - 35 USC § 112

The rejection of claims 2, 8, 11, 36-46, 62-64, 68-70 and 72 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention is withdrawn in view of the amendments to the claims.

The rejections of claims 8 and 10 under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement is withdrawn upon further consideration.

Claim Rejections - 35 USC § 103

The rejection of claims 1, 8, 10-15, 18, 19, 21, 22-24, 30- 35, 49, 51, 70, 87-90, and 138 are rejected under 35 U.S.C. 103(a) as being unpatentable over Livingston (WO 97/34921; published 25 September 1997) in view of Zeng (Zheng, W. et al., J. Peptide Science, 2: 66-72, 1996; of record) and further in view of Karsten (Karsten, U. et al., Cancer Research, 58: 2541-2549, 1998) is withdrawn in view of the amendment to the claims.

The rejection of claims 1, 49, and 50 under 35 U.S.C. 103(a) as being unpatentable over Livingston (WO 97/34921; published 25 September 1997) in view of Zeng (Zheng, W. et al., J. Peptide Science, 2: 66-72, 1996; of record); in view of Karsten (Karsten, U. et al., Cancer Research, 58: 2541-2549, 1998); and further in view of Boutillon (US 5,871,746; issued Feb. 16, 1999) is withdrawn in view of the amendment to the claims.

New Grounds of Rejection:

Claim Objections

Claims 11-13 are objected to under 37 CFR 1.75(c) for failing to further limit the claimed invention. This objection would be obviated by the following:

For 11: The glycolipopeptide of claim 1, wherein at least one of said MUC 1 epitopes comprises the amino acid sequence PDTRP (AAs 6-10 of SEQ ID NO: 10).

For 12: The glycolipopeptide of claim 11, wherein at the at least one of said MUC 1 epitopes comprises the amino acid sequence SAPDTRP (AAs 4-10 of SEQ ID NO: 10).

For 13: The glycolipopeptide of claim 1, wherein at least one of said MUC 1 epitopes comprises (a) the MUC1 consensus tandem repeat GVTSAPDTRPAPGSTAPPAH (SEQ ID NO: 10),

(b) a cyclic permutation thereof, or (c) a sequence substantially identical to (a) or (b) above.

Claims 15-17, 19-24, 36, 37, 39-46, 50, 63, 64, and 70-73 are objected to for the use of "where" instead if "wherein".

Claim 18 is objected to under 37 CFR 1.75(c) for failing to further limit the claimed invention. This objection would be obviated by the following:

The glycolipopeptide of claim 1, wherein at least one of said MUC 1 epitopes comprises a tumor-associated carbohydrate epitope.

Claim Rejections - 35 USC § 112

The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claims 1, 2, 8, 10-21, 26-72, 77-80, 90, 146, 149 and 150 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claim 1 is indefinite because of two instances of the phrase "at least one MUC peptide epitope", which does not have antecedent basis. This would be overcome by amending the claim to have the phrase "at least one MUC1 epitope".

Claim 1 is also indefinite because it is inconsistent. In the beginning of the claim the glycolipopeptide is described as containing at least 5 amino acids, whereas later in the claim the glycolipopeptide must have at least 10 amino acids (two MUC1 epitopes).

Claim 38 (and dependent claims 39-46) lacks antecedent basis for "The glycopeptides of claim 1", because claim 1 is drawn to a glycolipopeptide.

Claims 13 and 90 are indefinite because of the phrase "a sequence substantially identical" in claim 13. The phrase "a sequence substantially identical" is broad and reads on a peptide

where any and all amino acids are substituted. However, claim 1 requires at least two copies of P (D/E) (A/G/T/S) (R/K/H) P. This rejection would be overcome by the following:

For claim 13: The glycolipopeptide of claim 1, wherein at least one of said MUC 1 epitopes comprises (a) the MUC1 consensus tandem repeat GVTSAPDTRPAPGSTAPPAH (SEQ ID NO: 10),

(b) a cyclic permutation thereof, or (c) a sequence substantially identical to (a) or (b) above, wherein the substantially identical sequence contains the following amino acid sequence P (D/E) (A/G/T/S) (R/K/H) P.

Claim 29 is indefinite because of the use of "characterized", which does not positively set forth the structural limitation "a carboxy terminal sequence SSL". This rejection would be obviated by the following:

The glycolipopeptide of claim 1 comprising a carboxy terminal sequence SSL, wherein each of the serines is lipidated.

Claim 146 is indefinite because it refers to Ser-21 of SEQ ID NO: 2. This appears to be an error because there is no Serine at position 21 of SEQ ID NO: 2. Additionally, claim 148 which is dependent from claim 146, refers to Ser-22, which is present in SEQ ID NO: 2.

Claim Rejections - 35 USC § 112

The following is a quotation of the first paragraph of 35 U.S.C. 112:

> The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

Claims 1, 2, 8, 10, 15-21, 24, 26-72, 77-80, 149 and 150 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention. This is a New Matter rejection.

The amendment filed 2/13/2008 introduced new matter into the specification by the amendment of claim 1 to recite a MUC1 epitope that comprises the amino acid sequence:

P(D/E) (AGTS) (RKH)P.

In the remarks filed with the amendment of 2/13/2008, applicants pointed to page 65, line 5 in combination with page71, line 21 through page 72, line 29 for support for this sequence of a MUC1 epitope. A review of page 65 shows that the following is set forth in the specification as a MUC1 epitope: "P[D/E] [T/S]RP". Commonly, a species of this sequence is found, wherein the sequence is PDTRP. A review of page 71-page 72 provides a general discussion of conservative and semi-conservative substitutions. The discussion on pages 71-72 of the specification is not specific to substitutions within the MUC1 epitope. There is no support in the specification for choosing specifically the "T" of PDTRP and substituting either an "A" or a "G". There is no support in the specification for choosing specifically the "R" of PDTRP and substituting "K" or "H". The discussion on page 65 concerning substitutions refers to a 20 amino acid sequence where any one of the amino acids may be conservatively substituted, or where only a single nonconservative substitution is made.

Because the originally filed claims referred to a MUC1 epitope with the sequence: "P[D/E] [T/S]RP", and because any discussions of conservative substitutions relates generally to

peptides or to a 20 amino acid sequence tandem repeat of MUC1, the specification does not provide literal support for the amendment where the MUC1 epitope is set forth as "P(D/E)(AGTS)(RKH)P", nor does the specification provide inherent support because the amendment is referring to specific substitutions to two specific residues and there is no direction in the specification for choosing those two residues for substitutions by any thing other than what was originally set forth. Therefore, claim 1 as currently set forth, includes new matter that was not present in the specification as originally filed.

Claims 1, 2, 8, 10, 13-24, 26-72, 77-80, 87, 88, 90, 134-138, 149 and 150 are rejected under 35 U.S.C. 112, first paragraph, because the specification, while being enabling for a glycolipopeptide, wherein at least one amino acid is glycosylated, wherein at least one interior amino acid is lapidated, and wherein the glycolipopeptide comprises at least 2 MUC1 epitopes, wherein a MUC1 epitope comprises SEQ ID NO: 10, does not reasonably provide enablement for a glycolipopeptide having a MUC1 epitope comprising P(D/E)(A/G/T/S)(R/K/H)P, or for a glycolipopeptide having a MUC1 epitope comprising a sequence substantially identical to SEQ ID NO: 10. The specification does not enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to use the invention commensurate in scope with these claims.

Factors to be considered in determining whether undue experimentation would be required to practice the full scope of the claimed inventions are: 1) quantity of experimentation necessary; 2) the amount of direction or guidance presented in the specification; 3) the presence or absence of working examples; 4) the nature of the invention; 5) the state of the prior art; 6) the

relative skill of those in the art; 7) the predictability or unpredictability of the art; and 8) the breadth of the claims. See In re Wands, 858 F.2d at 737, 8 USPQ2d at 1404 (Fed. Cir. 1988).

Claim 1 is drawn to a non-naturally occurring glycolipopeptide comprising at least five amino acids, at least one amino acid being a glycosylated amino acid and least one amino acid being a lipidated amino acid, where at least one lipidated amino acid is an interior amino acid, said glycolipopeptide comprising at least two MUC1 epitopes each comprising the amino acid sequence P(D/E)(AGTS)(RKH)P, and wherein i) at least one MUC peptide epitope comprising the amino acid sequence P(D/E)(AGTS)(RKH)P which comprises at least one glycosylated amino acid, and ii) at least one MUC peptide epitope comprising the amino acid sequence P(D/E)(AGTS)(RKH)P which comprises only unglycosylated amino acids, wherein the amino acid sequences of said at least two MUC1 epitopes may be the same or different. Claims 13 and 19 read on glycolipopeptides having a sequence that is substantially identical to the amino acid sequence of SEQ ID NO: 10. The specification defines "substantially identical" as an epitope, when compared to a reference epitope, having at least 10% of an immunological activity of the reference epitope and differs from the reference epitope by no more than one non-conservative substitution. There may be any number of conservative substitutions (see page 73, lines3-11). On pages 71 and 72, the specification sets forth examples of "conservative", "highly conservative" and "semi-conservative" substitutions. The use of the claimed glycolipopeptides is as therapeutic agent for the induction of a specific immune response directed against tumor cells that express MUC1 epitopes.

The specification teaches a working example of immunization of mice with two examples of glycolipopeptides comprising two MUC1 epitopes, where one MUC1 epitope is glycosylated

and the other MUC1 epitope is not glycosylated, and wherein the peptides are lipidated. This glycolipopeptides have the structures shown in Figure 6. The peptide sequence of the two peptides used in the working example consists of the amino acid sequence of SEQ ID NO: 2. The amino acid sequence of SEQ ID NO: 10 is a fragment of SEQ ID NO: 2. The glycolipopeptides having the amino acid sequence of SEQ ID NO: 2 produce both an IgM and an IgG response in C57B1/6 mice. The specification fails to teach a working example of a glycolipopeptide comprising at least five amino acids, or a working example where the PDTRP sequence contains any substitutions, or where the glycolipopeptide contains a fragment of SEQ ID NO: 2, limited to two PDTRP sequences in tandem. The specification fails to teach a working example showing where substitutions with SEQ ID NO: 2, SEQ ID NO: 10 or the PDTRP sequence are tolerated. The specification fails to teach working examples showing that a glycolipopeptide having a substantially identical sequence, where the is only 10% immunological activity compared to the working example glycolipopeptides, is useful as a vaccine.

von Mensdorff-Pouilly (von Mensdorf-Pouilly, S., et al. Int. J. Cancer, 86: 702-712, 2000; cited in IDS) teaches that in humans the sequence RPAPGS is dominant compared to mice where the sequence PDTRPAP is dominant (see pages 707-708, bridging paragraph). von Mensdorff-Pouilly teaches that substitution of the arginine (R) of the PDTRPAP sequence affects reactivity of both the IgG and IgM samples to a greater extent than the two prolines in the STAPPA sequence (page 708, right column). von Mensdorf-Pouilly teaches that sequences other than the minimal PDTRP sequence within the tandem repeat are important for generating an immune response, such as STAPPAHGV and PAPGSTAP and APDTRPA (see page 708, right

column). Von Mensdorf-Pouilly also teaches that different studies using peptides from the MUC1 tandem repeat have yielded conflicting results (page 708-708).

Because of the breadth of the claims in the instant case, where the claims encompass a glycolipopeptide that does not include sequences other than the PDTRP, and because the claims encompass PDTRP sequence where the R is substituted, the specification does not enable one of skill in the art to use the full scope of the claimed glycolipopeptides in a method for the treatment of cancer, because the specification does not teach how to use glycolipopepitdes with only 10% of the immunological activity of glycolipopeptides comprising the amino acid sequence of SEQ ID NO: 2. The breadth of the claims is not commensurate in scope with the scope of the working examples. Furthermore, teachings in the prior art provide evidence that the field of making therapeutic MUC1 peptide vaccines is unpredictable, and that sequences from the MUC1 tandem repeat other than the PDTRP sequence are necessary for an immunological response in humans. Therefore, one of skill in the art would be forced to engage in further experimentation to use the full scope of the claimed glycolipopeptides as peptides for inducing a specific immune response in humans. This further experimentation would be undue experimentation because it would be experimentation on the invention itself without benefit from the guidance provided by the specification or guidance provided by the prior art.

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Conclusion

No claim is allowed. Claims 73, 74, 141-145, 147 and 148 are objected for depending from a rejected claim.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Anne Holleran, whose telephone number is (571) 272-0833. The examiner can normally be reached on Monday through Friday from 9:30 am to 5:00 pm. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Misook Yu, can be reached on (571) 272-0839. Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the Group receptionist whose telephone number is (571) 272-1600.

Papers related to this application may be submitted to Group 1600 by facsimile transmission. The faxing of such papers must conform to the notice published in the Official Gazette, 1096 OG 30 (November 15, 1989). The Official Fax number for Group 1600 is (571) 273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll free).

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